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# United States Patent [19]

## Binder

[11] **Patent Number:** **5,841,360**[45] **Date of Patent:** **Nov. 24, 1998**[54] **DISTRIBUTED SERIAL CONTROL SYSTEM**

## FOREIGN PATENT DOCUMENTS

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[21] Appl. No.: **734,921***Primary Examiner*—Michael Horabik*Assistant Examiner*—Yves Dalencourt*Attorney, Agent, or Firm*—Browdy and Neimark[22] Filed: **Oct. 22, 1996**[57] **ABSTRACT**[51] **Int. Cl.<sup>6</sup>** ..... **G06F 15/46**[52] **U.S. Cl.** ..... **340/825.07**; 340/825.06;  
340/310.01; 370/527; 370/529; 370/475;  
370/408; 370/501; 370/502; 370/419[58] **Field of Search** ..... 340/310.01, 825.07,  
340/825.06; 370/527, 529, 475, 408, 501,  
502, 419[56] **References Cited**

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A network topology allowing distributed sensing, control and communication, comprising a power source and a plurality of line-Powered, Serially connected Intelligent Cells (PSICs) coupled to the power source and to each other via respective communication channels comprising at least two electrical conductors. Each of the PSICs is uniquely addressed, preferably "on the fly" in real time, and at least one payload element is coupled to one of the PSICs for operating in accordance with control logic embedded in or fed to the corresponding PSIC. The communication channels allow for data transfer between adjacent PSICs in either or both directions independent of a simultaneous communication between another pair of adjacent PSICs.

**24 Claims, 4 Drawing Sheets**